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GASTRIC SYPHILIS, WITH THE REPORT OF A CASE  
OF PERFORATING SYPHILITIC ULCER  
OF THE STOMACH.

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CHIARI<sup>1</sup> opens his paper on "Gastric Syphilis," contributed to *Virchow's Festschrift*, in 1891, with the following remarks: "Although we are to-day sufficiently informed of the pathological changes caused by syphilis in most of the organs of the human body, and, thanks to the famous investigations of Virchow, we are able, in spite of our ignorance of the specific syphilitic virus, to identify the anatomical lesions of the disease, yet there are a few organs respecting which our knowledge of their syphilitic affections is not at all complete. To these latter organs belongs the stomach."

Chiari,<sup>2</sup> in his critical review of the reported cases of syphilis of the stomach up to the time of his publication, accepts as conclusive only those of Klebs, Cornil and Ranvier, Weichselbaum, and Birch-Hirschfeld. I shall follow Chiari in accepting these and rejecting the other reported instances, with the exception of Wagner's case, and I shall find in the meagre literature of the subject, especially in the English language, justification for the publication of the report of the present instance.

The case reported by Klebs<sup>3</sup> occurred in a man who showed, at the autopsy, besides an ulcer of the stomach, numerous ulcers and cicatrices of the skin, fresh ulcers of the pharynx, gummata of the lungs and liver, and ulcerating gummata of the intestine. He describes the gastric lesion somewhat as follows: The ulcer was situated on the

<sup>1</sup> "Ueber Magensyphilis." *Festschrift*, Rudolf Virchow, 1891, ii, 297.

<sup>2</sup> *Ibid.*

<sup>3</sup> *Handbuch der pathologischen Anatomie*, 1869, i, 269.

posterior wall near the lesser curvature, two inches from the cardia. The mucous membrane was the seat of a circular erosion the size of a franc-piece, which resembled strongly similar ulcerations of the base of the tongue. The remaining tissues of the stomach were thickened in this place, the serosa especially showed a strongly circumscribed, smooth, tendon-like thickening, which, in the region of the base of the ulcer, presented a variegated yellow appearance. The diagnosis was confirmed by microscopical examination.

Cornil and Ranvier<sup>1</sup> report the case of a woman, aged thirty-nine years, in whom gummata were found in the liver and stomach. There existed in the stomach several flat tumors occupying the lesser curvature in the region of the pylorus. These were about 5 cm. in width and 12 mm. in depth, and the infiltration, having the character of gumma, involved the mucous membrane, submucosa, muscularis, and even the serosa, which was thickened.

The case of Weichselbaum<sup>2</sup> was in a man twenty-five years of age. The immediate cause of death was erysipelas. Syphilitic lesions existed in the cranium, nose, pharynx, larynx, liver, and stomach. The stomach exhibited a contracted cicatrix and two ulcers. The latter were on the posterior wall, above the greater curvature, and their bases were composed of cicatricial tissue. It is probable, but not certain, that the ulcers and cicatrix had originated in gummata.

Birch-Hirschfeld<sup>3</sup> has encountered four cases. They are as follows :

One was a woman, aged forty-five years. The syphilitic infection dated from six years before her death. For four years she had suffered from gastric symptoms. At the autopsy were found (1) a gumma of the liver the size of the fist ; (2) in the anterior wall of the stomach, near the pylorus, an oval, yellow, firm plaque, 8 cm. long, showing slight ulceration. The base and edges consisted of firm cicatricial tissues, and the infiltration occupied mucosa and submucosa. The bloodvessels were obliterated.

The second case was a man who exhibited gummata of the lymph-glands, jejunum, and stomach. The last was of the nature of an ulcer situated at the cardia, the edges of which were dense and gummatous, the base clean.

<sup>1</sup> Manuel d'Histologie pathologique, 1884, ii. 296.

<sup>2</sup> "Syphilitische Geschwürs im Magen." Ber. d. Rudolfsptales in Wien, 1883, 383.

<sup>3</sup> Lehrbuch d. patholog. Anatomie, 1887, ii. 518, 537, 589.



The third instance was a male, thirty-five years old, infected four years previously, in whom were found gummata in the bronchial and mediastinal glands and small intestine, cicatrices in the liver, and an ulcer showing gummatous edges, affecting the lower end of the oesophagus and extending into the stomach. These three cases occurred in adults, presumably in all in consequence of acquired syphilis.

The fourth case of Birch-Hirschfeld was congenital in origin, and was a newly born child which presented lesions of skin syphilis and gummata in the liver and lungs. The pars pylorica ventriculi contained an elevated infiltration the size of the palm of the hand, white in color, and of firm consistence, consisting of a granulation tissue developed in the submucosa and mucosa. The granulation tissue was rich in epithelial cells and contained bloodvessels with thickened walls. Birch-Hirschfeld is of the opinion that the tumor was syphilitic in origin.

Chiari<sup>1</sup> paid especial attention to the occurrence of gastric syphilis, and in 243 cases which showed at autopsy anatomical lesions of syphilis he found 2 of undoubted gastric lues. The 243 cases included 145 of hereditary and 98 of acquired origin. One of the cases of gastric syphilis was of the inherited and the other of the acquired form.

The case of acquired syphilis occurred in a man twenty-three years of age. The clinical diagnosis was tuberculosis pulmonum, syphilis, and gastro-enteritis catarrhalis. The luetic infection dated from two years ante mortem. During the last year of life the patient had passed through an attack of syphilitic iritis and had had severe gastric symptoms. There was a large cicatrix on the glans penis. Gummata were present in the right lung, liver, kidneys, and intestines. The lung (right) and intestines showed lesions of tuberculosis. In both situations they were distinguishable from the syphilitic lesions. The stomach showed a chronic catarrhal condition in the region of the pars pylorica. In the region of the posterior wall, occupying the right side, and extending from the lesser to the greater curvature, there existed an almost circular loss of substance, 10 cm. in extent, that gave the impression of a peptic ulcer. The ulcer had perforated the

<sup>1</sup> Op. cit.

coats of the stomach in the central part, which was prevented from communicating with the peritoneal cavity by adhesions with the pancreas, the transverse mesocolon, and the lower part of the duodenum. Other infiltrated areas existed on the anterior wall near its middle. These projected above the surface, and upon microscopical examination they agreed with the syphilitic plaques in the intestine, with each other, and with the thickened edges of the ulcer. They are to be regarded as gummatous infiltrations, of which one had become ulcerated.

The instance of hereditary syphilis was in a boy three weeks old.<sup>1</sup> There were maculo-vesicular exanthem, pneumonia alba, gummatous cholangitis, and cholecystitis, gummatous plaques of the small intestine, osteochondritis syphilitica, and elevated plaques in the stomach. The general gastric mucous membrane was slightly injected; at several points it was thickened, pale-yellow in color, remarkably smooth, and protuberant. The thickening involved all the tissues, which, on section, presented a uniform, fibroid character. In some of the plaques central ulcerations existed. In all, five such growths were discovered. The microscopical examination showed a granulomatous tissue spreading from the submucosa into the other coats. A thick infiltration about the bloodvessels was noted. Necrosis was absent, but the structure of the gastric plaques agreed with the corresponding formations in the intestine and the nodules in the liver.

The next three reported cases are of the inherited form, and also emanate from Chiari's laboratory. Bittner<sup>2</sup> describes these cases, which arose within a period of one year. The first was a male child, which lived two and one-half hours. The anatomical diagnosis is given as pneumonia alba, chronic splenic tumor, osteochondritis syphilitica, and gummata of the liver, intestine, and stomach. In the last organ there were several discrete plaques occupying the anterior wall. These structures consisted of a granulomatous tissue, in which large, round and spindle-cells were found, which originated in the submucosa and extended into the mucous membrane. The

<sup>1</sup> "Lues hereditaria mit gummöser Erkrankung des gallsleitenden Apparates und des Magens." *Prager medic. Wochenschrift*, 1885, No. 47.

<sup>2</sup> "Zur Kenntniss der gummösen Magensyphilis." *Prager medic. Wochenschrift*, 1893, xviii. 581.



second was a fœtus of the sixth month. In it were found pemphigus, gummata in both lungs and in the liver, osteochondritis syphilitica, plaques in the small intestine, and a superficially ulcerated, infiltrated focus, the size of a pea, in the stomach, which had all the characteristics of gumma. The third case was a stillborn fœtus. The liver and adrenals contained gummata and the stomach thickened areas, which upon microscopical examination presented the appearance of syphilitic granulation tissue, developed especially in the submucosa and mucous membrane.

From 1893 to 1896 there appears to be a complete break in the literature of this subject. In this year appeared Stolper's<sup>1</sup> monograph on *Visceral Syphilis*, in which he describes a case of gastric syphilis. This case came to autopsy in the pathological institute in Breslau, and was the only instance of syphilitic affection of this organ in 86 cases (25 inherited, 61 acquired) of anatomical syphilis which had been examined post mortem in the institute during three years (1892-1895). It was an example of acquired lues.

The case was a man, forty-three years old. The anatomical diagnosis was: inveterate syphilis; cicatrices on penis; chronic fibroid pneumonia, purulent bronchitis, and bronchiectasis; cicatricial stenosis of trachea and larynx; atrophy at base of tongue; chronic and acute lymphadenitis; lobulated liver; ulcerated gummata of stomach.

The stomach was not dilated, and the general mucous membrane was free from thickening. The posterior wall of the organ showed an elevated area of elongated form, consisting of two converging bands which ran in its long axis. These could be covered by two fingers, and in the more elevated places they were the seat of pigmentation and multiple small ulcerations. These "convolutions" gradually became incorporated with the mucosa of normal thickness. The superior one measured 5 cm., the inferior about 10 cm. in length. The peritoneal coat was not thickened over the bands. On section the submucosa appeared greatly thickened, the mucosa in the region of the ulcers was destroyed, and elsewhere was invaded by the submucous infiltration. The microscopic examination showed the pathological process to be located chiefly in the submucosa, and the necrosis and ulceration of the mucous membrane to be the result of the oblit-

<sup>1</sup> "Beiträge zur Syphilis Visceralis (Magen-, Lungen-Herzsyphilis)." Bibliotheca Medica, 1896, C. Heft 6.

eration of bloodvessels passing to it. The new tissue differed from that described by other writers in that it was dense, contained few stainable cells and nuclei, presented in some places a fibrillated myxomatous and in others a definite necrotic appearance. The diagnosis is regarded as certain, because of the other typical syphilitic lesions in the body, and also because of the peculiar structure of the gastric lesion.

The doubtful example of Wagner<sup>1</sup> was of the acquired form, and was found in a man fifty-eight years old, in whom there was also noted syphilitic papilloma of the larynx. The gastric lesions consisted of three elevated and infiltrated foci, the largest being situated on the posterior wall of the stomach a short distance from the pylorus. The lesions were regarded by Wagner as syphilitic, although the microscopical appearances are not given by him.

This review contains the authentic cases of syphilitic lesions of the stomach which I have been able to find in the literature. It covers fourteen cases, of which number five were of the inherited and nine of the acquired form. From it will be seen that no instance of the disease has been recorded by writers in the English language; indeed, the proceedings of the London Pathological Society do not contain a single reference to such a disease. Further, with one exception—that of Cornil and Ranvier—the entire literature is German.

The case which I have to report is that of a male, fifty-two years of age, whose illness extended over a period of three years. The man was a patient of Dr. Irving Miller, of Baltimore, to whom I am indebted for the main clinical history and for the privilege to do the autopsy. He was in the hospital on two occasions, but only remained to be examined; he was not treated there.

Dr. Miller writes: "I first saw the patient in August, 1892. At that time he was a large, fairly well-nourished man, about six feet in height and weighing 170 pounds. His average weight was 200 pounds. His occupation was that of a showman. The first appearance of his illness was at the preceding Christmas, while filling an engagement in Boston, and followed a drinking-bout and exposure. It was ushered in by a severe spell of vomiting, which persisted for several days, and was followed by irregular chills. This condition of affairs continued off and on until the summer, when I first saw him. At this time the temperature ranged around 101° F.; there was a tumor in the splenic region, extending 9 cm. below the costal margin and forward nearly to the umbilicus. Exquisite tenderness was present all over the area of dulness. I regarded the tumor as being the enlarged spleen. The urine

<sup>1</sup> "Das Syphilom." Arch. d. Heilkunde, 1863, iv. 225.



contained bile-pigment, and there was some pigmentation of the skin. Neither sugar nor albumin was found in the urine. There was little change in the conditions noted for several months, when the splenic tumor was found to have diminished markedly and ascites to have appeared. The dropsy increased, involving the legs and scrotum. The patient was tapped for the first time on April 20, 1893; three and one-half gallons of fluid were withdrawn. The tapping was repeated at intervals of six days to two weeks, the amount of fluid withdrawn varying from two to six gallons. The relief afforded by the paracentesis was so great that the operation was resorted to to enable the patient to go fishing the next day. The accumulation of fluid continued for two years, and then began to diminish, until very little fluid could be detected in the abdomen. Purges were occasionally administered. The morphine habit was acquired. The night before his death the patient dined abundantly on fried crabs and ice cream. When I saw him, a few hours before his death, there were intense abdominal pain and tympanites. Pulse thready, weak, 130 to the minute; profuse sweating. He died in the early morning."

The patient had been in the hospital on two occasions—in February, 1893, and March, 1894—for examination. On his first entrance Dr. Hewetson found a full abdomen, no increase of liver dulness, the spleen enlarged and palpable three-fourths of a hand's breadth below the costal margin. When he returned in 1894 he reported having been tapped at intervals of about ten days, in all sixty-five times. After the removal of 9700 c.cm. of fluid the liver could be felt below the ensiform cartilage; it was hard and apparently bound down by adhesions. A probable diagnosis of hepatic cirrhosis was made.

The autopsy was performed eight hours after death on a warm day in June. The anatomical diagnosis was: Old adhesions between liver, stomach, spleen, and pancreas. Large hepatic gumma. Syphilitic ulcer of the stomach with perforation. Acute diffuse, sero-fibrinous, and gaseous peritonitis.

Only such parts of the protocol as bear on the subject of the paper are given. The peritonitis, it may be remarked, was caused by a mixture of the bacillus *aërogenes capsulatus*, the bacillus *coli communis*, and the streptococcus, the first organism predominating.

The omentum was greatly shortened, the small intestine contracted, and the general serous surfaces were thickened. The loops of the jejunum and ileum were particularly firm and rigid. The spleen was much enlarged, measuring 12 x 17 x 6 cm.; capsule opaque and cartilaginous. No gummata. It was bound firmly to the fundus of the stomach and covered by the very closely adherent omentum. The latter structure contained little fat, appeared as a mass of tatters, and was gathered together at the left border of the stomach, with which organ and the spleen it was firmly united. In gently separating the adhesions in this region the stomach contents were seen to issue from a small opening in this organ. They agreed with the material found in the peritoneal cavity when it was first opened. The wall of the stomach in this situation was firm and board-like, and on being dissected

away from the spleen was found thickened out of all proportion to the rest of the organ. The perforation had taken place below the splenic adhesion and at a point uncovered by complete omentum.

On opening the much contracted stomach the general mucous membrane presented a mammillated appearance; but in the fundus, 4 cm. from the cesophageal opening and occupying the greater curvature, a large ulcer, measuring 5 x 5 cm., was found. The base of this over most of the central part was the muscularis; the edges were thick, polypoid, and firm, and the perforation was 15 x 3 mm. in size. Just about the perforation the tissues presented a greenish and necrotic appearance (Plate I).

The liver was bound to the diaphragm; its capsule was thick and cartilaginous. The left lobe was reduced to a mere appendage, but it was firm and nodular. The right lobe was not especially reduced in size. On section of the organ the remnant of the left lobe was occupied by a mass formed by the confluence of several gummatous nodules, and the mass extended well into the right lobe along its lower border. The tumor thus formed lay over the portal vein, which was thick and white in color as it entered the porta of the liver, and passed upward to the summit of the liver between the lobes and impinged on the vena cava. The dimensions of the tumor were 11 x 4 x 5 cm. The gummata were of perfectly characteristic appearance, and, on histological examination, presented the usual structure. Gummata were not found in other organs.

For the purpose of the microscopic study pieces of the ulcer from several different parts were subjected to examination. The principal microscopic characters are as follows: The pathological process is localized chiefly in the submucosa and exists in two distinct stages. The earlier stage is less frequently met with, and consists of a cellular infiltration of the submucosa, through which the tunic is rendered much thicker than normal. The cells belong, in general, to the type of granulation-tissue cells, many of which are large and epithelioid in appearance. They are interpolated between the old connective-tissue fibrils and collected into large, more independent foci. The infiltration extends from the submucosa into the muscular coat, and to a much less degree into the mucous layer. The muscularis mucosa is for the most part the limiting line above. Within the large cellular accumulations foci of necrosis occur. These are quite large and consist of centres of coagulation necrosis, in which much fragmentation of nuclei and emigrated polymorphonuclear leucocytes are prominent features. The form of necrosis is consistent either with tuberculosis or syphilis; in its acuteness it resembles that seen in the former disease. The necrotic foci extended freely into the muscle and not at all into the mucosa. The bloodvessels in this situation show a simple infiltration of the adventitial coat, except in the necrotic areas, where they are obliterated.

The later stage is more common, and is what is met with in all parts of the ulcer and the tissue forming its elevated boundaries. It consists of dense fibrous tissue, which again is developed chiefly in the submucosa, and





Gastric syphilis. Stomach laid open along the lesser curvature.





then extends into the muscular tunic. Scattered granulation-tissue cells are found among the developed fibrils. The bloodvessels are extensively diseased; endarteritis and endophlebitis obliterans, and hyaline thrombosis with organization are common. The serous coat, too, is thickened, and in some places about the adhesions greatly so.

The base of the ulcer is covered to some extent with mucous membrane, and only in its centre is it bare. The muscular coat is exposed in this part, and the more superficial fibres are quite necrotic. The elevated edges of the ulcer are clearly not the remains simply of the old mucosa and submucosa. This is proven by comparison with the surrounding intact mucosa, which is much less elevated. The microscopic examination shows the thickening to be due to a new development of dense fibrous tissue, such as was described in the later stages of the general pathological process.

There can, I think, be no doubt that the ulcer is of syphilitic origin: the character of the new tissue and the form of cell-death met with seem sufficient proof for this belief. But I think it much more improbable that it is due to the softening of a gumma. Indeed, I find very little evidence in support of such a view. On the other hand, the appearances described speak more for an indirect form of necrosis of the mucous membrane, brought about by the combined softening of submucous gummatous infiltration and the obstruction and obliteration of bloodvessels in the same situation. The mucous membrane thus deprived of its nutrition became necrotic, was removed, and the ulcer resulted. The submucosa suffered either directly through necrosis of the infiltrating cells, or, again, indirectly, owing to the vascular changes combined with the action of bacteria.

The clinical course of the disease is made clear by the autopsy findings. The splenic tumor and ascites were the results of the portal obstruction; the obstructing agent was the syphilitic tumor. It seems reasonable to suppose that the gumma was larger at one time than it was at the autopsy, and that the reduction of the ascites was owing to this change. The evidence for this might be found in the size of the left lobe of the liver, and is strengthened by the absence of a marked collateral circulation. The immediate cause of death was the perforation into the peritoneal cavity of the gastric ulcer in a part unprotected by adhesion with surrounding structures.

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#### EXPLANATION OF PLATE.

The stomach is laid open along the lesser curvature. The drawing, which was kindly made by Dr. Livingood, is of natural size.

